WE CLAIM:

1. An acid modified dry-milled starch composition comprising a viscosity profile wherein at a 14.5% solids concentration, a starting temperature of 30°C, and a heating rate increase of 7.5°C/min, the composition at a time 0 through gelatinization undergoes a viscosity increase to a maximum value in the range of 600 and 1600 BU torque at a time in the range of 6.5 to 7.2 minutes, followed by a decrease in viscosity to a value in the range of 240 to 640 BU torque at a time of 8.4 minutes, based on a Brabender micro visco amylograph.

2. The composition of claim 1, wherein the viscosity increases to a maximum value in the range of 750 and 1350 BU torque.

3. The composition of claim 2, wherein the viscosity decreases to a value in the range of 300 to 600 BU torque.

4. The composition of claim 1, wherein the viscosity increases to the maximum value at a time in the range of 6.7 to 7.0 minutes.

5. The composition of claim 1, wherein the acid modified starch composition is formed from:

an acid component; and

a starch component having an amount of fat, wherein the amount of the acid component is added, at least in part, relative to the fat percent in the starch component.

6. The composition of claim 5, wherein the acid component is hydrochloric acid.

7. The composition of claim 5, wherein the starch component is formed from a starch composition selected from the group consisting of dry milled milo flour, dry milled corn flour, and combinations thereof.

8. A gypsum slurry formed from the starch composition of claim 1.

9. A drywall product formed from a gypsum slurry composition comprising the starch composition of claim 1.

10. An acid modified dry-milled starch composition comprising a viscosity profile wherein at a 14.5% solids concentration, a starting temperature of 30°C, and a heating rate increase of 7.5°C/min, the composition at a time 0 through gelatinization undergoes a viscosity increase to a maximum value in the range of 600 and 1600 BU torque at a time in the range of 6.5 to 7.2 minutes, followed by at least a 40 percent decrease in viscosity at a time of 8.4 minutes, based on a Brabender micro visco-amylo-graph.

11. The composition of claim 10, wherein the viscosity decreases in the range of 45 to 65 percent.

12. The composition of claim 10, wherein the viscosity increases to a maximum value at a time in the range of 6.7 to 7.0 minutes.

13. The composition of claim 10, wherein the acid modified starch composition is formed from:

an acid component; and

a starch component having an amount of fat, wherein the amount of the acid component is added, at least in part, relative to the fat percent in the starch component.

14. The composition of claim 13, wherein the acid component is hydrochloric acid.

15. The composition of claim 13, wherein the starch component is formed from a starch composition selected from the group consisting of dry milled milo flour, dry milled corn flour, and combinations thereof.

16. A gypsum slurry formed from the starch composition of claim 10.

17. A drywall product formed from a gypsum slurry composition comprising the starch composition of claim 10.

18. An acid modified dry-milled starch composition comprising a viscosity profile wherein at a 14.5% solids concentration, a starting temperature of 30°C, and a heating/cooling rate of 7.5°C/min, the composition at a time 0 through gelatinization undergoes a viscosity increase to a maximum value in the range of 600 and 1600 BU torque at a time in the range of 6.5 to 7.2 minutes, followed by a decrease in viscosity and a subsequent increase in viscosity at the end of a final holding period to a value that is substantially the same as the maximum value, based on a Brabender micro visco amylograph.

19. The composition of claim 18, wherein upon gelatinization the viscosity increases to a maximum value in the range of 750 and 1350 BU torque.

20. The composition of claim 18, wherein at the end of the final holding period the viscosity increases to a value that is within 17 percent of the maximum value.

21. The composition of claim 18, wherein at the end of the final holding period the viscosity increases to a value that is within 11 percent of the maximum value.

22. The composition of claim 18, wherein at the end of the final holding period the viscosity increases to a value that is within 5 percent of the maximum value.

23. The composition of claim 20, wherein upon gelatinization the viscosity increases to a maximum value at a time in the range of 1.0 to 2.0 minutes.

24. A gypsum slurry formed from the starch composition of claim 18.

25. A drywall product formed from a gypsum slurry composition comprising the starch composition of claim 18.

26. An acid modified dry-milled starch composition, the composition formed by the process comprising:

combining an acid component and a starch component to form a mixture, wherein the ratio of the acid component is added, at least in part, relative to the fat percent in the starch component;

heating the mixture to a temperature of 85°C or less for a sufficient time effective to obtain the acid modified starch.

27. The acid modified starch of claim 26, wherein the acid component is hydrochloric acid.

28. The acid modified starch of claim 26, wherein the starch component is formed from a starch composition selected from the group consisting of milo flour, corn flour, and combinations thereof.

29. The acid modified starch of claim 26, wherein the heating is performed at a temperature in the range of 72°C to 85°C.

30. The acid modified starch of claim 29, wherein the heating is performed at a temperature in the range of 76°C to 79°C.

31. The acid modified starch of claim 26, wherein the heating is performed for a time of 0.5 hours or less.

32. The acid modified starch of claim 31, wherein the heating is performed for a time in the range of 0.25 to 0.5 hours.

33. The acid modified starch of claim 31, wherein the heating is performed for a time in the range of 0.01 to 0.25 hours.

34. A gypsum slurry formed from the starch composition of claim 26.

35. A drywall product formed from a gypsum slurry composition comprising the starch composition of claim 26.

36. A method of forming an acid modified starch composition, comprising:

combining an acid component and a starch component to form a mixture, wherein the ratio of the acid component is added, at least in part, relative to the fat percent in the starch component;

heating the mixture to a temperature of 85°C or less for a sufficient time effective to obtain the acid modified starch.

37. The method of claim 36, wherein the heating is performed at a temperature in the range of 72°C to 85°C.

38. The method of claim 36, wherein the heating is performed at a temperature in the range of 76°C to 79°C.

39. The method of claim 36, wherein the heating is performed for a time of 0.5 hours or less.

40. The acid modified starch of claim 39, wherein the heating is performed for a time in the range of 0.25 to 0.5 hours.

41. The method of claim 39, wherein the heating is performed for a time in the range of 0.01 to 0.25 hours.

42. The method of claim 36, wherein the acid component is hydrochloric acid.

43. The method of claim 36, wherein the starch component is formed from a starch composition selected from the group consisting of dry milled milo flour, dry milled corn flour, and combinations thereof.

44. The method of claim 36, wherein the amount of acid component is increased, in part, relative to an increase in fat percent in the starch component.

45. The method of claim 44, wherein the amount of acid component increases substantially linearly relative to an increase in the fat percent in the starch component.